

Letter from Alexander Graham Bell to Mabel Hubbard Bell, November 13, 1904, with transcript

ALEXANDER GRAHAM BELL TO MABEL (Hubbard) BELL Beinn Bhreagh, C. B. Sunday, November 13, 1904. You poor little long suffering neglected wifie:

I am afraid I can only write scrappy notes unless you can resign yourself to the typewriter and receive a dictation. I stopped my last note in the middle of a sentence — and wonder whether I have saved a mail by doing so. I spoke of each of us having an appendix — and this is the Appendix to the letter just sent you.

Every man, woman and child living in the world has that apparently useless appendix — ready to become inflamed at any time — sympathetically with inflammatory action elsewhere in the bowels. An indiscretion in meals may bring it on — or rather — bring on inflammatory action in which it necessarily participates — in fact if the bowels are inflamed from any cause — the appendix of course will also be involved. Any time — anyone has an inflammation of the bowels — I have no doubt a specialist would be able to detect appendicitis — but it does not necessarily follow that the presence of the appendix is the cause of the inflammation — or even has anything to do with it. The appendix necessarily becomes inflamed when the structure to which it is attached is inflamed. And poor little Daisy — and all of us for that matter — have been unnecessarily alarmed — by the fact that she has had appendicitis. Of course she has had appendicitis because she has an appendix — but there is nothing in her history — or the history of her family — to lead to the supposition that there is anything abnormal about her appendix. None of my 2 ancestors or relatives, so far as I know have died from inflammation of the bowels — or from causes involving inflammation there — and I am pretty sure that you too can report a clean bill of health in this respect — on behalf of your ancestors and relatives.

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There is no reason therefore to suppose that Daisy has any inherited tendency towards appendicitis.

We are none of us built like that wonderful “one horse chaise” which was so perfectly built in all its parts — that when it finally came to grief — it gave way everywhere at once — and crumbled into dust. We have most of us weak spots in our constitution — and when we have a severe illness that brings us down nearly to death's door the weak points are developed and made clear.

Daisy has been tried in this way — and there is no reason to suspect a tendency towards appendicitis as a weak point in her make up. You too have been tried but your weak point has not proved to be in the neighbourhood of the appendix.

I repeat then — that there is nothing in Daisy's personal history, or the history of her ancestors or relatives to indicate any danger to her from the possession of an appendix. She simply shares the common danger to mankind — of possessing a useless structure — non-functional — which nature is gradually getting rid of — by killing off those who have it developed to an abnormal degree. There are a good many people living in the 3 world in spite of the fact that they possess a useless vestigial structure — inherited from our animal ancestors (in whom it was probably functional) — and there is no reason to suppose that Daisy is in greater danger from appendicitis than the majority of the people of the world.

When you come to consider the nature of the operation and the risk to life involved — the operation is surely unwarrantable on persons in good health — unless there is reason to believe that they had inherited an abnormal appendix — liable to be of danger to them throughout life. If this is Daisy's case — serious trouble would have developed before this. The fact that she has lived for 24 years in this world — without any indication of abnormality in the appendix — is a sufficient indication that she does not belong to this class.

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The mere fact of her having appendicitis once — or half-a-dozen times — does not necessarily mean that the presence of the appendix has anything to do with the matter — for any inflammation of the bowels — however caused — necessarily causes also an inflammation of the appendix. An operation is unwarrantable unless there is reason to believe that the presence of the appendix is itself the cause of the trouble. This is not Daisy's case — for — supposing the contrary — it would have troubled her more than it has during a life of 24 years.

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Your letters — showing that you are still considering the advisability of an operation — trouble me — and alarm me. Life is too sacred a thing to be trifled with — and unless Daisy knows more about a hereafter than I do — she will prefer to bear those ills she has rather than fly to others that she know not of. She has done well in the past — and nature has carried her safely through the present crisis — therefore let well enough alone — and run no unnecessary risks. Certainly don't try vivisection unless there is absolute necessity for it. In this matter I would care more for the opinion of a good common sense physician — like Dr. Sowers — than for that of a special expert appendicitis surgeon. Surgeons are altogether too ready with the knife — unless when it comes to their own persons.

In the American Journal of Science for November there is a rather tedious article upon one of the most interesting events in the world — the discovery of a fossil egg, with its contents practically intact — but converted into bitumen. A veritable romance of reality — which even the technical language of the scientific expert cannot rob of interest.

Oh! for the pen of a ready writer — what a fascinating story — yet absolutely true — could be hatched out of that egg. Bring it to Bert's attention. Perhaps he could write something about it for the National Geographic Magazine or for other journals.

A prospector — examining the stones in the bed of the 5 Gila River in Arizona — came upon a water-worn pebble 4 or 5 inches in diameter. He cracked off a fragment with his

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pick and discovered a fossil egg inside. The specimen fell into the hands of a gentleman in California who has now brought it to the attention of scientific experts. He has loaned it — for examination — to the California University — and the November number of the American Journal of Science (Silliman's) contains photographs of it — and a technical account of the results of the examination. The chief point of interest from a scientific point of view — is the fact that the contents of the egg have been converted into a bituminous substance resembling asphalt — thus supporting the hypothesis that bitumen is derived from animal remains.

The egg is quite large — as large as that of a duck or goose — and resembles most closely the egg of a cormorant. It is so perfectly preserved as to show that it must have become completely embedded — very shortly after it was laid — in the substance that afterwards consolidated into limestone. Here we have a snap-shot photograph of an event that happened hundreds of thousands of years ago. A bird of the size of a cormorant or goose laid this precious egg — which by some mischance — tumbled into the water — or at all events into the soft ooze of which limestone is formed — with sufficient force to become completely embedded in the ooze — and thus protected. For countless years this ooze continued to be formed on top — and at last the whole became consolidated into limestone. Then the limestone was lifted from its watery bed — by volcanic or other action — and became a portion of a mountain range. Then erosion began. Through the agencies of frost and rain — sunshine and cold — fragments of limestone were broken off — until at last the egg was reached — and the fragment containing it fell into one of the gullies that feed the Gila River. There — in flood time — it was rolled over and over — amid a multitude of other stones — small and big — until all its angles were rubbed off and it became a water-worn pebble in a mountain stream — moving ever downwards when the floods came in sufficient volume to stir it from its resting place — and then a prospector — searching for gold or other minerals — found it and cracked it with his geologic pick-exposing one end of the egg. What a wonderful history — but still more wonderful is the thought of the thousands and thousands of years that must have elapsed between the day

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when the egg fell into the water and became embedded — and the day when it next met the light — as a fossil — in the hands of a man.

That Census work tired me all out — and upon my return from Truro — I went to bed and slept for about 24 hours! Since then I have been looking after my health — and — incidentally — the laboratory also — but alas — alas — the days slip by and Census work has been untouched. I have gone to bed about 11 in hopes of awaking in the middle of the night — but I know nothing more — until the usual time in the morning. On getting up I go to laboratory intending to return at lunch time — but laboratory work absorbs my attention and it is dinner time before I know it. 7 Then my poor father, who has been patiently waiting for me all day, demands my attention. I read to him and the mail comes — he retires for the night — and it is time for me also to retire — or go to work on Census material at the expense of my health. I retire with the determination to get up about day-break and go on with census work after a rest. But I am not conscious of anything more until Charles brings me up my breakfast in the morning. And so the days go on. I am now feeling well but am quite discouraged about the Census work. It seems to be impossible for me to devote attention to more than one thing. The question of Census versus Laboratory is ever before me. I can attend to one or the other — but not both combined without injury to my health.

I wish I could remain here to the end of the year — but feel it may be best for us all to return to Washington about the end of the month. It is my duty to attend the Smithsonian meeting about the 6th of December, and I should therefore be in Washington before that time — and could not well leave my father here and return.

But for this meeting of the Smithsonian I might just as well remain until Christmas and I think my father and Mrs. Bell would be contented to stay too.

Monday morning 6 A.M.

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We have everything ready for experiment with the big kite — but I don't care to risk it in anything less than a moderate breeze. So we are whistling for wind — not too much, and not too little, and not in the wrong direction — conditions that involve moderate waiting.

In the meantime we have been building structures of various kinds experimentally. The balloon section we built turns out to be light enough and strong enough to be used as the interior framework of a hot air balloon — or hydrogen balloon — and the question in my mind is — would it be strong enough for a vacuum balloon. If it is strong enough to withstand the withdrawal of one-fifth of the contained air it would float like a balloon — without hydrogen — and without heating. I scarcely dare to hope that this is so. Indeed theoretical considerations distinctly discourage the idea of a vacuum balloon depending for its buoyancy upon a partial vacuum within the structure. The atmospheric pressure — surely — would crush the structure in. The pressures would be enormous even with a slight diminution of internal pressure.

Still I can't help remembering that theoretical considerations would have prevented the completion of the telephone — and did indeed delay experiment for about one year.

It is easy enough to say — try it — but this cannot be done without the expenditure of much time and money.

The thought occurs however, if the structure will not support sufficient external pressure to render a vacuum balloon practicable — what pressure will it support? This can be tested without much delay — and with the means we have at hand. We are now getting ready to test the crushing strain of structures built from tetrahedral cells — and I hope — in a few days — to obtain experimental data which will enable me to calculate whether or not — a vacuum balloon is a practicable thing. If it is — which I doubt — it would pay to keep the laboratory open all winter with the usual staff — (not the present abnormal number — employed in making tetrahedral cells to be used next year in trying a vacuum balloon. If it is not — it would pay to close the laboratory here when I return to Washington.

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We have just completed a vacuum box of strong wood — pasted all over with cotton cloth. With glass tube dipping into a cup of mercury to show the degree of rarefaction within. By means of a brass pipe we can pump out some of the air. A tetrahedral structure can be placed on top of a box — covered with air-tight material. A hole in top of box connects air-space within structure with air-space of box. We propose to pump out the air until the tetrahedral structure collapses — noting the height of the mercury when the collapse occurs.

If the structure should support a pressure equivalent to one-fifth of an atmosphere — a vacuum balloon can certainly be made. I must confess that I don't have much expectation that it will — but anyway we will ascertain what pressure it will support — and thus have material for calculation.

For structural uses I propose to have tetrahedral cells cast of metal — and I am now developing a form of lock to lock the cells together. Tying with string is all right for 10 kites and light structures — although involving much labor in tying many cells together.

Tetrahedral nuts and bolts are all right for large cells, like those used in the wind-break — but not so well suited for small cells. Small cells however, are more efficient than large ones. A structure built from a multitude of small cells — is solid indeed. It is of the utmost consequence for the practical utilization of the cells in structures like bridges, arches, walls of houses, boats and etc., that we should develop a suitable means of connecting the cells together. Tying would be unsuitable for such a purpose. Experiments in laboratory show that a simple lock device can be made which will admit fastening and unfastening the cells without much trouble.

Your loving husband, Alec. Mrs. A. Graham Bell, Twin Oaks, Woodley Lane, Washington,
D. C. U. S. A.